



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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| <b>(51) International Patent Classification <sup>6</sup>:</b><br>C07C 4/06, C10G 11/05, B01J 29/84                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>A1</b> | <b>(11) International Publication Number:</b> WO 99/57087<br><b>(43) International Publication Date:</b> 11 November 1999 (11.11.99)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>(21) International Application Number:</b> PCT/US99/09740<br><b>(22) International Filing Date:</b> 4 May 1999 (04.05.99)<br><b>(30) Priority Data:</b><br>09/073,148 5 May 1998 (05.05.98) US<br><b>(71) Applicant:</b> EXXON CHEMICAL PATENTS INC. [US/US];<br>5200 Bayway Drive, Baytown, TX 77520-5200 (US).<br><b>(72) Inventors:</b> CHEN, Tan-Jen; 5615 Lofty Magnolia Court,<br>Kingwood, TX 77345 (US). DAVIS, S., Mark; 6160<br>Wildlife Way Court, Baton Rouge, LA 70817 (US).<br>MARTENS, Luc, R., M.; Prinsenbeemdlaan 3, B-1860<br>Meise (BE). JANSSEN, Marcel, J., G.; Domeinstraat 84,<br>B-3010 Kessel-Lo (BE). RUZISKA, Philip, A.; 2010<br>Wind Creek Drive, Kingwood, TX 77345 (US).<br><b>(74) Agents:</b> ZBORAY, James, A. et al.; Exxon Chemical Company,<br>P.O. Box 2149, Baytown, TX 77522-2149 (US).                                                                                                                                                                                                                                                             |           | <b>(81) Designated States:</b> AE, AL, AM, AT, AU, AZ, BA, BB, BG,<br>BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB,<br>GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR,<br>KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN,<br>MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK,<br>SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW,<br>ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG,<br>ZW), Burasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ,<br>TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI,<br>FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent<br>(BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE,<br>SN, TD, TG).<br><br><b>Published</b><br><i>With international search report.</i><br><i>Before the expiration of the time limit for amending the<br/>claims and to be republished in the event of the receipt of<br/>amendments.</i> |
| <b>(54) Title:</b> HYDROCARBON CONVERSION TO PROPYLENE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>(57) Abstract</b><br><br>The invention provides a method for converting an olefinic hydrocarbon feedstock to propylene comprising: contacting a hydrocarbon feedstock under catalytic cracking conditions with a catalyst comprising a catalyst selected from the group consisting of SAPO catalysts, MeAPO catalysts, MeASPO catalysts, ELAPO catalysts, ELASPO catalysts, rare earth exchanged catalysts from any of the preceding groups, and mixtures thereof, under cracking conditions to selectively produce propylene. The invention further provides a method for stabilizing a catalyst to steam from the foregoing group by ion exchange with a rare earth metal. A catalyst has enhanced stability as used herein when treated with a rare earth metal or metals in a concentration effective to provide a catalyst which exhibits a higher conversion of a hydrocarbon feedstock to propylene than does an equal quantity of an untreated sample of the same catalyst under the same conditions following exposure of each catalyst to steam for a period of at least 10 hours. |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |